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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/669,044	09/23/2003	Kinya Kato	15162/06190	3994
24367	7590	05/17/2006	EXAMINER	
SIDLEY AUSTIN LLP 717 NORTH HARWOOD SUITE 3400 DALLAS, TX 75201			LAZORCIK, JASON L	
			ART UNIT	PAPER NUMBER
			1731	

DATE MAILED: 05/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/669,044

Applicant(s)

KATO ET AL.

Examiner

Jason L. Lazorcik

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09/3/2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09/23/2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 09/23/2003.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim 11 is objected to because of the following informalities: The reference to "grassy" carbon is an apparent spelling error from the prior references to "glassy" carbon in the specification. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1,2,9,10,11,13,14, and 16-20 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Blair (4,139,677).

Regarding Claim 1, Blair teaches in the immediate reference (column 6, lines 33-55) a method of fabricating a precision glass mold for use as a lens molding die by:

1. using an inverse mold form surface as a base for depositing silicon carbide (Column 6 Lines 45-46)
2. deposit a layer of the silicon carbide (Column 6 Lines 44)
3. installing the layer on a sturdy support member in order to add strength and durability (Column 6 Lines 54-56)
4. separating the silicon carbide layer from the inverse mold (Column 6 Lines 47-50).

It is understood that identified inverse mold form is equivalent in scope to the claimed die master with reference surface. Having formed a silicon carbide film on this reference surface, Blair teaches that the silicon carbide layer should be installed or equivalently "bonded" onto a support which is interpreted in Claim 1 as commensurate with the "die base member".

Claim 2 adds the further limitation that a separating film is to be deposited between the master die reference surface and the silicon carbide film. Blair clearly discloses (column 6 lines 45-48) the deposition of "a parting or release agent, first applied to the inverse mold form, followed by deposition of a relatively thick layer of (silicon carbide)".

With respect to Claim 9, Blair teaches (Column 6 Lines 13-15) that a layer of silicon carbide may be "prepared by chemical vapor deposition...as a layer on a suitable substrate".

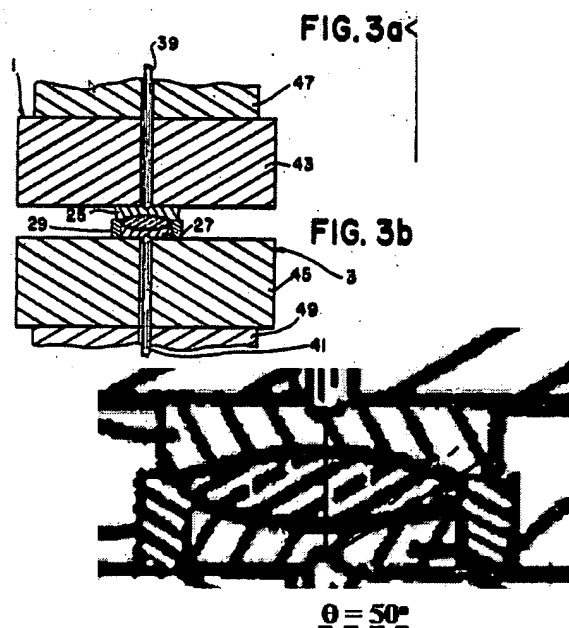
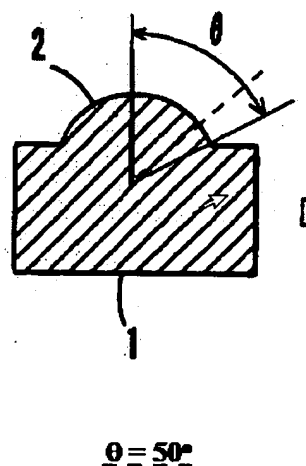
Claims 10 and 11, provide limitations on the materials of construction of the master die as being Silicon carbide or a hard metal (Claim 10) and "grassy" carbon (Claim 11). Blair teaches that the suitable substrates for deposit of silicon carbide include "graphite...or hot pressed silicon carbide". Here, the use of silicon carbide as a suitable substrate reads on composition of the master die in Claim 10, and the reference to graphite as a substrate is understood to read as the use of "grassy" carbon as the composition of the master die in Claim 11.

Regarding Claim 13, Blair teaches in the immediate reference figure 3b the fabrication of a convex shaped objective lens using a pair of mating concave mold

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inserts (elements 25 and 27). Since Blair in column 6, lines 43 refers to the use of an inverse mold form surface to produce to produce said concave mold inserts, the inverse mold form surface or "master die" necessarily has a convex reference surface.

Further regarding Claim 14, reference is again made to Blair figure 3b in light of process 1 in figure 1 of the application. A magnified view of the mold assembly used by Blair is presented to the lower right of the reference figure 3b.

**PROCESS 1**

It is noted that an angle 50° from normal (dashed red line with respect to vertical solid red line) has been overlain with both Fig 3b and the applicants figure to denote the peripheral inclination angle. In accord with the discussion above in the rejection of Claim 13, a peripheral inclination angle of a lens as depicted in figure 3b necessitates an identical peripheral inclination angle in the master die. It is clear from the Blair figure that the as molded lens displays a maximum peripheral inclination angle of 50 degrees

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or more and therefore the un-pictured master die must have displayed an identical inclination angle.

With respect to Claim 16, Blair teaches (Column 9 lines 62-68) in addition to all of the elements described above, a method of forming a lens by applying a load to the mold assembly comprised of lens molding dies (25 and 27) thereby pressing heat softened glass into final lens form.

In Claim 20, Blair disclosed (See rejection of claim 2 above) the formation of a separating film between the master die and the silicon carbide film prior to both finalizing the lens molding die and press molding a lens.

In accord with the present Claim 17, Blair further teaches (Column 8 lines 64-66) that during the molding step, "provision may be made to hold the glass out of contact with inserts 25 and 27 until heated". This assertion is understood to comprise holding the glass material between the upper and lower die (eg. Inserts 25 and 27) and heating each die and the glass prior to molding.

Further, Blair teaches (Column 8 Lines 62-64) with respect to Claim 18 that the glass is placed in the molding chamber and that "it may be set in contact with the inserts" or on the lower die prior to molding. The reference continues in column 9 line 39 by specifying that the glass is of the extra dense flint optical glass type which is broadly understood to be equivalent to fused glass material.

With reference to claim 19, Blair teaches (Column 11 lines 15-24) a method of placing an unheated portion of glass in a transfer chamber, softening the glass, and forcing the heated glass under pressure from the transfer chamber into the mold cavity

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(the volume enclosed by the upper and lower die) thereby injecting and filling the cavity.

Blair also specifies (column 11 lines 43-45) that amended molding parameters would permit the molding of plastics into finished optical elements.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 3, 4, and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blair in view of Bernstein (4,705,659). Blair teaches all of the elements of claim 1 as outlined above by outlining a method of making a lens molding die by forming a silicon carbide layer on a master die and bonding said film onto a die base.

With respect to claim 3, Blair teaches the use of a separating layer between the master die and the deposited silicon carbide film. Blair does not specifically identify carbon as the material for use in the separating film. Bernstein teaches the use of a

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carbon release layer applied to a substrate to effect the release of a subsequently deposited layer in order to produce a free standing thin film. It would have been obvious to one of ordinary skill in the art to utilize a carbon as a separating layer in order to cleave a lens molding die from a master die.

Bernstein (Column 3 lines 6-8) further teaches with respect to Claim 4 that the carbon release layer may be plasma or sputter deposited or it may be formed by the pyrolysis of other carbon-containing films. The inclusion of sputter deposition as an acceptable deposition technique for the carbon film is read as equivalent to the applicants limitation of physical vapor deposition (PVD). By simple extension of the above argument, it would have been obvious to one of ordinary skill in the art to utilize sputter deposition in order to deposit said carbon separating layer in the manufacture of said lens molding die.

Regarding Claim 5, Bernstein (column 1 lines 12-14) specifically identifies oxidation as a method of removing the previously mentioned carbon separating layer. The details of this oxidative removal or "ashing" process are outlined in the immediate reference in Column 3, lines 28-37. Again by simple extension to the argument for claim 3 above, it would have been obvious to one of ordinary skill in the art to modify Blair in light of Bernstein to utilize oxidative ashing to remove residual carbon separating layer from a master die or lens molding die

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Blair in light of Fantone. Blair again covers all the elements of the parent Claims 1 and 2, however the primary reference does not specifically disclose the use of a metallic film

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that can be etched as the separating film. Fantone teaches the fabrication of an optical element using a release layer preferably composed of silver, gold, or copper to assist the separation of said optical element from a tool for forming the element. Fantone further discloses that upon separation, the release layer is then chemically removed from the optical element. It would have been obvious to one of ordinary skill in the art to utilize an etchable metal as a separating layer in order to assist in cleaving a lens molding die from a master die.

Claims 7,8, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blair in view of Umetani (JP 07025628). As previously outlined, Blair teaches all of the elements disclosed in Claim 1.

With respect to Claim 7, Blair does not teach either that the die base member or the silicon carbide film should be machined before bonding as outlined in the applicants claim. Umentani teaches a similar approach to fabricating a precision lens mold by forming a silicon carbide film on a master plate or master die and transferring said film to a mold matrix or "die base member". Umentani specifically teaches both that the silicon carbide thin film as well as the mold matrix are to be polished or "machined" prior to the bonding step where the film and mold matrix are bonded together. It would have been obvious to one skilled in the art to modify Blair in light of Umentani in order to provide an optimal interface and thus provide the best adhesion between the film and mold matrix.

Continuing along similar lines with respect to Claim 8, Blair teaches that the film is to be installed upon a sturdy support. Blair does not specifically disclose the use of a

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ceramic adhesive or a carbon adhesive as a material for joining said film to said support or "die base member". Umentani teaches that a silicon dioxide thin film can be formed both on a mold matrix or "die base member" as well as on the surface of the thin film. After chemically and heat treating these silicon dioxide or "ceramic adhesive" layers and bringing the faces of each film into contact, a bond between the matrix and silicon carbide film is formed through a ceramic adhesive layer. It would have been obvious to one of ordinary skill in the art to modify the installation step disclosed in Blair by the silicon dioxide bonding method disclosed in Umentani in order to produce a strong adhesive bond between the silicon carbide layer and the mold matrix.

Regarding Claim 12, Blair does not explicitly discuss a choice of material for the support or "die base member". Umentani teaches that the mold matrix is to be made of a cemented carbide composed mainly of WC in his process for forming a lens mold die. It would have been obvious at the time of the invention to modify Blair using a mold matrix or die base member composed principally of WC in order to minimize thermal stress between the SiC film and the die base member during high temperature molding operations.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Blair in view of Bernstein as applied to claim 3 above, and further in view of Umentani. Umentani teaches that both the mold matrix and silicon carbide layer are to be machined prior to bonding as outlined in the rejection of Claim 8 above. Umentani does not teach that the mold matrix is to be machined or polished after bonding the die base member to the silicon carbide film, but before separation of the lens molding die from

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the master die. Bernstein (Column 8 Lines 15-21) discloses that the molding surface is finished to provide lenses of high surface qualities, and that the quality of manufactured lenses are directly impacted by the accuracy and quality of the lens molding die surface. Bernstein teaches (Column 7 lines 55-59) that the mold inserts 25 and 27 are to be mounted on a pair of supports 43 and 45. It is reasonable to assume that the support or die base member may require machining in order to facilitate mounting of the lens molding die to the supports 43 or 46. If this machining is required after adhering the silicon carbide film to said die base member, it would be obvious to one of ordinary skill in the art to perform such machining prior to separating the lens molding die from the master. Performing said machining prior to the separation would be reasonable in order to protect the molding surface from chips, scratches, and pits that may be received during the machining steps.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason L. Lazorcik whose telephone number is (571) 272-2217. The examiner can normally be reached on Monday through Friday 8:30 am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on (571) 272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


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